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TENT COOPERATION TREL Y

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 15 March 2001 (15.03.01)	
International application No. PCT/GB00/02552	Applicant's or agent's file reference DLB/67345/000
International filing date (day/month/year) 03 July 2000 (03.07.00)	Priority date (day/month/year) 02 July 1999 (02.07.99)
Applicant SMITH, Nigel, Peter et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
30 January 2001 (30.01.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Juan Cruz Telephone No.: (41-22) 338.83.38
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PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference DLB/67345/000	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 02552	International filing date (day/month/year) 03/07/2000	(Earliest) Priority Date (day/month/year) 02/07/1999
Applicant GLOBOL CHEMICALS LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

P B 00/02552

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E03D9/03

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 747 139 A (ROBERTET) 10 October 1997 (1997-10-10) page 1, line 38 -page 2, line 85; figure 1 ---	1-20
X	EP 0 538 957 A (LEE DE NV SARA) 28 April 1993 (1993-04-28) the whole document ---	1-12, 14, 15, 17, 19, 20
X	EP 0 785 315 A (LEE DE NV SARA) 23 July 1997 (1997-07-23) cited in the application column 2, line 24 -column 3, line 21; figures 1,2 -----	1-7, 13, 15-17, 20

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

21 September 2000

Date of mailing of the international search report

09/10/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

De Coene, P

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/AB 00/02552

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2747139	A	10-10-1997	NONE	
EP 0538957	A	28-04-1993	NL 9101759 A	17-05-1993
			AU 656236 B	27-01-1995
			AU 2718892 A	29-04-1993
			CN 1074004 A	07-07-1993
			DE 69208806 D	11-04-1996
			DE 69208806 T	25-07-1996
			DK 538957 T	01-04-1996
			ES 2087436 T	16-07-1996
			KR 148809 B	15-10-1998
			MW 5692 A	13-04-1994
			NZ 244857 A	26-10-1995
			ZA 9208168 A	04-05-1993
EP 0785315	A	23-07-1997	NL 1001722 C	23-05-1997
			AT 194186 T	15-07-2000
			AU 711453 B	14-10-1999
			AU 7400796 A	29-05-1997
			DE 69609046 D	03-08-2000
			DE 785315 T	20-05-1999
			ES 2142777 T	01-05-2000
			NZ 299791 A	26-08-1998
			SG 47196 A	20-03-1998

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference

(if desired) (12 characters maximum) DLB/67345/000

Box No. I TITLE OF INVENTION

A DISPENSER

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

GLOBAL CHEMICALS (UK) LIMITED
Station Road
Bampton
Devon EX16 9NG
United Kingdom (GB)

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

GB

State (that is, country) of residence:

GB

This person is applicant for the purposes of:

☐ all designated States☒ all designated States except the United States of America☐ the United States of America only☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

SMITH, Nigel Peter
Chackeridge Cottage
Ashbrittle, Wellington
Somerset TA21 0LJ
United Kingdom (GB)

This person is:

☐ applicant only☒ applicant and inventor☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

GB

State (that is, country) of residence:

GB

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☒ the United States of America only☐ the States indicated in the Supplemental Box☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

BROWN, David Leslie
PAGE HARGRAVE
Southgate, Whitefriars
Lewins Mead
Bristol BS1 2NT
United Kingdom (GB)

Telephone No.

+44 117 927 6634

Facsimile No.

+44 117 929 8007

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Sheet No. 2

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

CUNLIFFE, Rebecca Jane
Norman House
Plymtree, Cullompton
Devon EX15 2LA
United Kingdom (GB)

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

GB

State (that is, country) of residence:

GB

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☒ the United States of America only☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☐ the United States of America only☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☐ the United States of America only☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States☐ all designated States except the United States of America☐ the United States of America only☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Sheet No. 3

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|--|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LC Saint Lucia |
| <input checked="" type="checkbox"/> AG Antigua and Barbuda | <input checked="" type="checkbox"/> LK Sri Lanka |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AT Austria and Utility Model | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BZ Belize | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> MZ Mozambique |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CZ Czech Republic and Utility Model | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> DE Germany and Utility Model | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DK Denmark and Utility Model | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> DZ Algeria | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> EE Estonia and Utility Model | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> FI Finland and Utility Model | <input checked="" type="checkbox"/> SK Slovakia and Utility Model |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZA South Africa |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |

Check-box reserved for designating States which have become party to the PCT after issuance of this sheet:



Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Sheet No. 4

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 2 July 1999 (02/07/99)	9915601.0	GB		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): **1**

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA)
(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA /

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

Box No. VIII CHECK LIST: LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3
description (excluding sequence listing part) : 14
claims : 4
abstract : 1
drawings : 3
sequence listing part of description : -

Total number of sheets : 25

This international application is accompanied by the item(s) marked below:

- ☒ fee calculation sheet
- ☐ separate signed power of attorney
- ☐ copy of general power of attorney; reference number, if any:
- ☐ statement explaining lack of signature
- ☐ priority document(s) identified in Box No. VI as item(s):
- ☐ translation of international application into (language):
- ☐ separate indications concerning deposited microorganism or other biological material
- ☐ nucleotide and/or amino acid sequence listing in computer readable form
- ☒ other (specify): P23/77

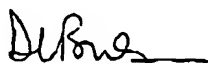
Figure of the drawings which should accompany the abstract: 2

Language of filing of the international application:

English

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).



BROWN, David Leslie

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference DLB/67345/000	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/02552	International filing date (day/month/year) 03/07/2000	Priority date (day/month/year) 02/07/1999
International Patent Classification (IPC) or national classification and IPC E03D9/03		
Applicant GLOBOL CHEMICALS LIMITED		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 11 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 30/01/2001	Date of completion of this report 13.07.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Leher, V Telephone No. +49 89 2399 7352 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02552

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-14 as originally filed

Claims, No.:

1-20 as originally filed

Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
 - ☐ the language of publication of the international application (under Rule 48.3(b)).
 - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
4. The amendments have resulted in the cancellation of:
- ☐ the description, pages:
 - ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02552

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 20.

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 20 are so unclear that no meaningful opinion could be formed (*specify*):
see separate sheet

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

☐ restricted the claims.

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- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
- ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☒ all parts.
- ☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1-19
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-19
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

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see separate sheet

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Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

No opinion can be stated regarding claim 20, because of lack of clarity (see item VIII).

Re Item IV

Lack of unity of invention

1. Lack of unity of the invention a priori

1.1 The separate groups of invention are:

Independent claim 1 and its dependent claims 2-14, 17-19

Independent claim 15

Independent claim 16

Independent claim 20

1.2 They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

One or more "special technical features" among all of the groups of inventions (Rule 13.2 PCT) does not exist.

1.3 Remark:

See in this respect also what is written below under item VIII, concerning the number of independent claims.

2. Lack of unity of the invention a posteriori

Claims 2-6, 12, 13 directly referring to claim 1 which object is not new

- the separate inventions or groups of inventions described in these claims are not so linked as to form a single general inventive concept (article 3(4)(iii) PCT and rule 13.1 PCT) and
- the application does no more fulfill the requirements of article 6 PCT, because the claims as a whole are no more clear (PCT-Guidelines, Section IV, III, 4.1, first sentence).

Re Item V

Reasoned statement under Article 35 (2) with regard to novelty, inventive step or industrial

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applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: FR-A-2747139

D2: EP-A-0785315

2. Independent claim 1 - Novelty

- 2.1 Document **D1** is considered to represent the most relevant state of the art.

- 2.2 **D1** discloses a

dispenser (figure 1) for suspension from the rim of a toilet bowl (see page 1, lines 2-4 and 38-40),

said dispenser including:

a reservoir **10** for containing a viscous liquid active substance **12** (s. p. 1, l. 39);

a flow restrictor **36** (s. p. 2, l. 51-53) operable to limit the flow of said active substance **12** from said reservoir **10**,

said flow restrictor **36** having an inlet side (in the liquid **12**) and an outlet side (in the chamber **32**),

wherein

application of toilet flushing water over the dispenser creates a pumping action which operates to displace at least one discrete dose of said active substance **12** through said flow restrictor **36** (s. p. 2, l. 60-73).

- 2.3 Thus, the combination of features of independent claim 1 is disclosed by the device described in **D1**. Therefore, the subject-matter of claim 1 is not new (Article 33 (2) PCT).

- 2.4 Document **D2** also discloses a dispenser according to claim 1. Therefore the subject-matter of claim 1 is also not new with respect to document **D2**.

3. Independent claim 15 - Novelty

- 3.1 Document **D1** is considered to represent the most relevant state of the art.

- 3.2 **D1** discloses a

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dispenser (s. fig. 2) for suspension from the rim of a toilet bowl to dispense active substance into a toilet bowl,

said dispenser including:

a body member **28** (s. p. 2, l. 90);

a reservoir **10** for active substance **12** mountable on said body member **28**;

a dispensing surface **32** (surface of chamber **32**) positioned to receive active **12** substance from said reservoir **28** and, upon flushing, to release said active substance **12** to flush water; and release means **42** operable to control the flow of active substance from said reservoir **10** to said dispensing surface **32**,

whereby

said release means **42** is operable to dispense at least one discrete dose of said active substance onto said dispensing surface **32** upon flushing of said toilet (s. p. 2, l. 86 - p. 3, l. 115).

3.3 Thus, the combination of features of independent claim 15 is disclosed by the device described in **D1**. Therefore, the subject-matter of claim 15 is not new (Article 33 (2) PCT).

3.4 Document **D2** also discloses a dispenser according to claim 15. Therefore the subject-matter of claim 15 is also not new with respect to document **D2**.

4. Independent claim 16 - Novelty

4.1 Document **D1** is considered to represent the most relevant state of the art.

4.2 **D1** discloses a

dispenser (see fig. 3) for suspension from the rim of a toilet bowl to dispense active substance into the bowl,

said dispenser including

a reservoir **10** for active substance;

a dispensing surface (surface of chamber **32**) positioned to receive active substance **12** from said reservoir and to release said active substance to flush water when the toilet is flushed (see p. 3, l. 124- 129);

and release means **54** to control the transfer of said active substance from said reservoir **10** to said dispensing surface,

whereby, in use, a void **32** is maintained between said reservoir **10** and said dispensing surface between flushes.

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4.3 Remark:

The dispensing surface is seen in the inner surface of chamber **32**.

On flushing the surface of chamber **32** receives the active substance, because the flushing water entering the chamber **32** is mixed with the active substance. Therefore the dispensing surface is positioned to receive active substance **12** from the reservoir **10**.

Further, the surface of the chamber **32** is positioned in such a way, that active substance by entering chamber **32** is mixed with the flush water. Therefore the surface of the chamber **32** is positioned in such a way, to release the active substance to the flush water, when the toilet is flushed.

After flushing the mixture of active agent and water passes the hole **38** until the chamber **32** is empty. Therefore, between the flushes a void in chamber **32** is maintained between the reservoir **10** and the dispensing surface.

4.4 Thus, the combination of features of independent claim 16 is disclosed by the device described in **D1**. Therefore, the subject-matter of claim 16 is not new (Article 33 (2) PCT).

4.5 Document **D2** also discloses a dispenser according to claim 16. Therefore the subject-matter of claim 16 is also not new with respect to document **D2**.

5. Dependent claims

The subject-matter of the dependent claims is not new because the additional features of

- claims 2-8 are also disclosed in **D1** or **D2**,
- claims 9-12, 14, 17-19 are also disclosed in **D2**,
- claim 13 is also disclosed in **D1**.

Re Item VII

Certain defects in the international application

- 1.** Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents **D1** and **D2** is not mentioned in the description, nor are these documents identified therein.
- 2.** The second sentence ("Where possible,...") in the description, page 6, should have been deleted to avoid an expansion of the extent of protection in some vague and not precisely defined way (PCT-Guidelines C-III, 4.3a and 6.5).

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Re Item VIII

Certain observations on the international application

1. Number of independent claims of the same category

Although claims 1, 15, 16, 20 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

Hence, claims 1, 15, 16, 20 do not meet the requirements of Article 6 PCT.

2. Reference signs in parentheses should have been inserted in all claims to increase their intelligibility; this applies to both the preamble and characterising portion (Rule 6.2(b) PCT).

3. The following claims do not meet the requirements of article 6 PCT, because they are not clear:

3.1 Claim 1:

The features

"... the application of toilet flushing water over the dispenser creates a pumping action which operates to displace at least one discrete dose of said active substance through said flow restrictor."

in the apparatus claim 1 relates to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.

The same objection applies to claims 3 and 4.

3.2 Claim 2:

It is not clear, how a pumping action can comprise a pressure differential.

3.3 Claim 5:

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In the passage

"... said dispenser is constructed and arranged so that, ..."

the feature "dispenser is arranged" relates to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.

3.4 Claim 10:

The term "vertical" is relative and therefore not clear. The words "in use" should have been added, to precise the relative term.

3.5 Claim 12:

The term "said chamber" is mentioned in claim 8 for the first time. Therefore claim 12 can not depend on claims 1-7.

3.6 Claim 20:

Claim 20 contains a reference to the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here. In addition the vague and imprecise wording of claim 20 does not define clearly the subject-matter for which protection is sought.

Therefore claim 20 should have been deleted.

4. The order of claims 15-19 is not logical. Claims 17-19, which depend on claim 13 or 14, should have been placed directly after claim 14.

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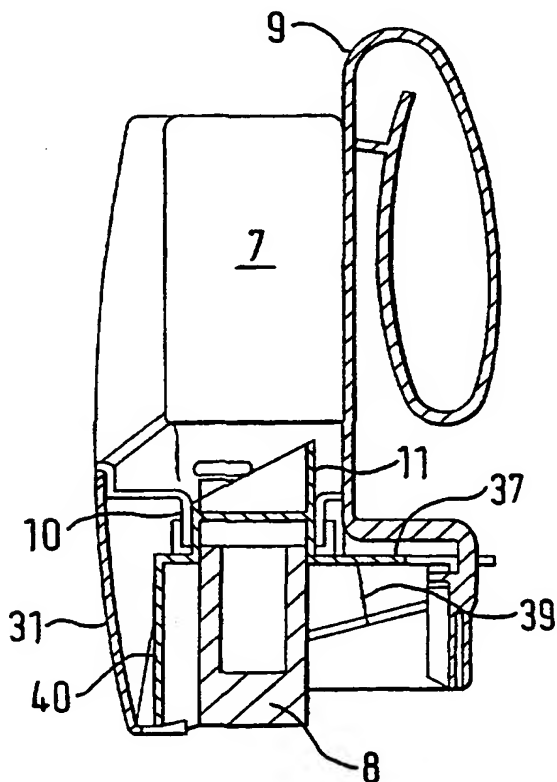
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[Continued on next page]

(54) Title: A DISPENSER



(57) Abstract: The invention provides a dispenser (5, 50) which can be suspended over the rim of a toilet bowl to dispense a dose of active ingredient into the bowl as the toilet is flushed. The dispenser draws active liquid from a reservoir (7, 51) in discrete doses, each dose being released by a pumping action which is caused by the action of the flush water on the dispenser. The dispenser includes a flow restrictor (14) which normally prevents egress of the active liquid from the reservoir but which releases a dose under the influence of the pumping action.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A DISPENSER

Field of the Invention

This invention relates to a dispenser and, in particular, to a dispenser adapted for suspension from the rim of a toilet bowl
5 to dispense one or more active substances, such as cleansing and/or freshening preparations, into the bowl as the toilet is flushed.

Background to the Invention

Devices suspended from the rims of toilet bowls, to dispense
10 freshening and/or cleaning preparations, are well known. In one form, such a device comprises a cage used to retain a replaceable block impregnated with disinfectant and/or freshening agent. When the toilet is flushed, the flush water passes through the cage and degrades part of the block. The
15 active substances from the block are entrained in the water and thus pass out into the toilet bowl.

More recently rim mounted toilet cleaning and freshening devices have become available which include a porous pad in communication with a reservoir of a viscous liquid cleaning and
20 freshening substance. The liquid substance saturates the pad and is drawn out when flush water is directed over the pad. As active cleaning liquid is flushed from the pad, further liquid is supplied from the reservoir to re-saturate the pad. An example of this type of device is described and claimed in European
25 Patent Application 0 785 315.

Existing liquid dispensing devices of the type disclosed in EP 0 785 315 tend to be quite complex in design so as to prevent

excess amounts of active substance emanating from the reservoir, collecting on the already saturated pad, and dripping. Further, with existing products, the source of the active substances is in contact with the pad at all times and, between
5 flushes re-saturates the pad. However, owing to typical viscosities of the active substances, it takes a period of time (typically 15 to 20 minutes) to re-saturate the pad after a flush. Thus, if the toilet is flushed in quick succession, insufficient active substance will have collected on the pad, and thus be
10 released, to provide efficacious results.

It is an object of this invention to provide a simple yet effective form of rim mounted toilet bowl dispenser which dispenses a viscous liquid active substance but which addresses at least some of the drawbacks mentioned above; or which will at least
15 provide a useful choice.

Summary of the Invention

Accordingly, in a first aspect, the invention provides a dispenser for suspension from the rim of a toilet bowl, said dispenser including:

20 a reservoir for containing a viscous liquid active substance;

a flow restrictor operable to limit the flow of said active substance from said reservoir, said flow restrictor having an inlet side and an outlet side,

said dispenser being characterised in that application of toilet
25 flushing water thereover creates a pumping action which operates to displace at least one discrete dose of said active substance through said flow restrictor.

Preferably said pumping action provides a pressure differential within said dispenser to drive said active substance through said flow restrictor.

5 Preferably said pumping action operates to displace a volume of air through said flow restrictor from the outlet side thereof, which volume of air, in turn, displaces said at least dose of active substance through said flow restrictor from the inlet side thereof.

10 Preferably said dispenser is constructed and arranged so that, in its normal position of use, said active substance contacts the inlet side of said flow restrictor under gravity.

15 Preferably said dispenser further includes at least one fluid dispensing surface spaced from the outlet side of said flow restrictor from which components of said active substance can emanate. This dispensing surface is preferably positioned to receive active substance from said flow restrictor under gravity.

20 Preferably said dispensing surface is provided as one or more wall surfaces of a chamber positioned to receive active substance from said flow restrictor. Said chamber is preferably formed, at least in part, from a porous material.

25 Preferably said chamber includes a substantially vertical peripheral wall and closing means at the bottom of said peripheral wall. Said peripheral wall may be rectangular in cross-section but is preferably cylindrical. Said closing means is preferably formed integrally with said peripheral wall.

All wall sections of said chamber are preferably formed from said porous material. Preferably said closing wall is thicker than said peripheral wall.

Said peripheral wall preferably has a thickness of substantially 2mm and a porosity of 70 to 125 microns when used with an active preparation of viscosity 400 to 800 cPs.

5 Alternatively said vertical peripheral wall is non-porous, said dispensing surface being defined by a porous pad or plate positioned in contact with, or closely adjacent, the lower edge of said peripheral wall.

10 Preferably said dispenser further includes venting means operable to maintain a void on the outlet side of said flow restrictor between flushes.

15 Preferably said chamber further includes location means operable to fix the alignment of said chamber with respect to said flow restrictor. Preferably said location means and said venting means are defined by a common part of said chamber. This common part may comprise a slot defined in said vertical peripheral wall.

Preferably said dispenser further includes ramp means constructed and arranged to direct water towards said chamber.

20 In a second aspect the invention provides a dispenser for suspension from the rim of a toilet bowl to dispense active substance into a toilet bowl, said dispenser including:

a body member;

a reservoir for active substance included within or mountable on said body member;

25 a dispensing surface positioned to receive active substance from said reservoir and, upon flushing, to release said active substance to flush water; and

release means operable to control the flow of active substance from said reservoir to said dispensing surface,

5 said dispenser being characterised in that said release means is operable to dispense at least one discrete dose of said active substance on to said dispensing surface upon flushing of said toilet.

In a third aspect the invention provides a dispenser for suspension from the rim of a toilet bowl to dispense active substance into the bowl, said dispenser including

10 a reservoir for active substance;

a dispensing surface positioned to receive active substance from said reservoir and to release said active substance to flush water when the toilet is flushed; and

15 release means to control the transfer of said active substance from said reservoir to said dispensing surface,

said dispenser being characterised in that, in use, a void is maintained between said reservoir and said dispensing surface between flushes.

20 Preferably said dispensing surface is formed, at least in part, from a porous material. Preferably said porous material is shaped into a cylinder with one end closed.

Preferably said dispenser is as hereinbefore set forth, wherein said cylinder comprises said chamber.

25 Many variations in the way the invention may be performed will present themselves to those skilled in the art upon reading the following description. The description which follows should not

be regarded as limiting but rather, as an illustration only of one mode of performing the invention. Where possible, a description of any element or component should be taken as including any or all equivalents thereof whether or not specifically mentioned. The scope of the invention should be determined solely by the appended claims.

Brief Description of the Drawings

One form of dispenser embodying the various aspects of the invention will now be described with reference to the accompanying drawings in which:

- | | |
|-----------------|---|
| Figure 1: | shows a front elevational view of a dispenser according to the invention; |
| Figure 2: | shows a view along the line II-II in Figure 1 ; |
| 15 Figure 3: | shows a view, from above, of the dispenser shown in Figures 1 and 2 with reservoir and suspension hook removed; |
| 20 Figure 4: | shows a view, from below, of the dispenser shown in Figures 1 to 3, with chamber and suspension hook removed; |
| Figure 5: | shows an enlarged view of part of the view shown in Figure 2 ; |
| 25 Figure 6: | shows a fluid receiving and emanating chamber for incorporation in the dispenser shown in Figures 1 to 5; |

Figure 7: shows a similar view to Figure 2 but of an alternative embodiment of dispenser according to the invention; and

5 Figure 8: shows an enlarged view of the area ringed in Figure 7.

Detailed Description of Working Embodiment

Referring firstly to Figures 1 to 6 of the drawings, the present invention provides a dispenser 5 which, in use and as is well known, is suspended over the rim of a toilet bowl (not shown) so as to lie at least partly in the path of flush water when the toilet is flushed. In the conventional manner, part of the flush water passing over the dispenser entrains active substances contained therein, and carries these substances down into the toilet bowl. The active substances typically comprise or include disinfectants, odour neutralisers, fragrances etc.

In the form shown, the dispenser comprises four main parts, a moulded body section 6, a detachable active substance reservoir 7, a dispensing surface in the form of chamber 8, and a hook section 9. The hook section 9 is preferably formed integrally with the body section 6, whilst the substance reservoir 7 and the chamber 8 are preferably separate components which are engaged with the body section 6 and integral hook section 9, to render the dispenser operable.

As can be seen in Figures 1 and 2, when in use, the reservoir 7 is inverted and engaged, via the outlet neck 10 thereof, over a hollow mounting spigot 11 projecting upwardly from the body section 6. The upper edge of the spigot 11 may, as shown, be formed into a barb 12 which serves to pierce a frangible membrane (not shown) which is provided over the outlet

aperture of the reservoir, during manufacture thereof, to prevent leakage prior to use.

5 The spigot 11 has a central vertical bore 13 therethrough in which is located a flow restrictor 14. In the form shown, the flow restrictor comprises a simple plate having an inlet side 15, an outlet side 16, and a small central hole 17 therein. The hole 17 is sized having regard to the viscosity of the active substance so as to ensure that, when active substance flows from the reservoir 7 under gravity and into contact with the inlet side 15 of the restrictor 14, surface tension prevents flow through the hole 17. However, under the effect of the pumping action generated when the toilet is flushed, at least one dose of the active substance is displaced through the hole 17.

15 Using an active substance with a viscosity in the range of 450 to 700 cPs, we have found that a round hole 17 of 2mm diameter provides satisfactory results. Having said that, satisfactory results are also achieved using an active substance of a viscosity as low as 120 cPs, in conjunction with a star shaped aperture having a net diameter of about 2mm

20 Provided on the outlet side 16 of the flow restrictor is a small outlet channel 18.

Also located on the outlet side of the flow restrictor 14 is a fluid dispensing surface on which the unit of active substance dispensed through the flow restrictor can gather for subsequent removal by the toilet flush water, and from which components of the active substance, such as fragrance, can emanate. In the form shown in Figures 1 to 6, the dispensing surface is incorporated in the walls of chamber 8 located in recess 20 formed in the body part 6.

As can be seen, the chamber 8 is constructed and positioned to lie in the path of the flush water when the dispenser is suspended from the toilet rim in the known manner. At least part of the wall defining the chamber is formed from a porous material so that a dose of active substance passing through the flow restrictor and collecting in the chamber 8 can permeate through parts of the chamber walls and gather on the outer surface of the chamber. When the toilet is next flushed, the flush water entrains the active substance which has collected on the outside of the chamber (and perhaps some which is still within the chamber wall but close to the outer surface) and carries the same out into the toilet bowl. Between flushes, the dose of active substance entrained in the chamber walls emanates fragrance to freshen the toilet environment.

In the particular embodiment depicted and described in Figures 1 to 6, the chamber 8 is oriented substantially vertically and all walls thereof are defined by porous material. It will be noted, however, that the base or closing wall 21 of the chamber is preferably thicker than the vertical wall sections 22. This results in the passage of active substance through the base being less (or slower) than passage through the vertical wall sections.

It will be noted from Figures 5 & 6, that the chamber 8 is also provided with a vertical slot 23 extending down from the upper edge thereof, the slot 23 stopping short of the upper surface of the closing wall 21. This, in combination with the thicker section of the closing wall 21, reduces the likelihood of active substance dripping from the chamber 8 between flushes. However, the principal purpose of the slot 23 is to ensure rapid entry of the flush water into chamber 8, and rapid drainage of the same water therefrom. The rapid entry of the water into chamber 8 is believed to generate a pumping action which

pushes air through the flow restrictor and into reservoir 7. The air forced into the reservoir, in turn, displaces a dose of active substance back through the flow restrictor 14. It may also be that the surge of flush water simply disturbs the surface tension of the active substance where it covers the flow restrictor 14, thus allowing a unit dose of the active substance to pass through the restrictor .

At the end of the flush, the water drains quickly through the slot 23 and thus maintains a void between the source of active substance and the dispensing surface. This is important to prevent diffusion of water into the active substance which would dilute and lower the viscosity of the active substance, until ultimately rendering the system uncontrollable.

When the chamber 8 is mounted within recess 20 in the body section, the slot 23 is located about key 25 (Figure 4) which closes across part of the recess 20. This ensures that, when the dispenser is mounted in its operative position beneath the rim of a toilet bowl, the slot 23 is aligned rearwardly and in the general direction of the flow of flush water deflected over the dispenser. However, it is conceivable that the chamber 8 may be rotatable within the body section to allow the slot to be positioned to receive a greater or lesser amount of flush water, thereby varying the pumping action and amount of active substance released per flush.

The precise geometric configuration of the chamber 8 can be varied. In the embodiment shown the vertical walls 22 are defined by a cylindrical wall section, but a rectangular arrangement could also be used. The benefit of the cylindrical section is that the chamber can be readily and efficiently formed by boring a central hole 26 in a rod of porous material. However, the chamber could be formed in a number of alternative ways including cutting lengths of porous rod and plugging one end thereof.

The chamber is preferably formed from sintered polypropylene material manufactured by Sintair Limited of Kings Lynn, Norfolk, England.

5 The performance of the dispenser as described herein is affected by the size of the chamber 8, area of exposure to the flush water, material porosity from which the chamber is formed, and the viscosity of the active substance. In experimental testing, we have found that satisfactory results are achieved using a chamber having an outside diameter of 12mm, an inside
10 diameter of 8mm, a side wall thickness of 2mm and a base thickness of about 10mm. When mounted in recess 20, about 20mm of vertical wall section 22 is exposed below the body section. The chamber as above described is formed in a sintered material having a mean porosity of 120 micron and
15 preferably receives an active substance of viscosity in the range 120 to 700 cPs.

Obviously one can maintain an effective operating balance by varying the porosity of the chamber wall and also varying the viscosity of the active substance and the diameter of hole 17.

20 The body section 6 includes a front face 30 and end walls 31 and 32 which form an outer cage about the mounting spigot 11 and the chamber 8. The front face 30 includes apertures 33 therein to enhance the aesthetic appearance of the dispenser and to allow flush water to pass out through the front surface of
25 the dispenser. As can be seen in Figure 1, the top edge 35 of the front face 30 is shaped to correspond to the form of the upper edge 36 of reservoir 7 so that the reservoir is neatly located and retained by body 6 when inverted and mounted on the body section 6.

30 The spigot 11 projects substantially vertically from a horizontal central web section 37 which extends rearwardly of the front face

30 and effectively spaces the front face 30, and side walls 31 and 32, forward of the mounting point on a toilet bowl. To the rear, and below, the web 37 are located a pair of downwardly directed ramp surfaces 38a and 38b which terminate in vertical
5 apertures 39 facing the chamber 8. The ramp surfaces 38a, 38b serve to deflect flush water in the direction of the chamber 8 and may be provided with vanes 40 to further capture and align the flush water.

10 It will be further noted that the body section includes an intermediate wall section 40 which extends behind the body front surface 30 but in front of the chamber 8. This wall section 40 serves to ensure the chamber 8 is only contacted by active substance and flush water and, in particular, cannot be "targeted" by males urinating in the toilet bowl.

15 Finally it will be noted that the suspension hook 9 extends from a rearward extension of the central web section 37.

In use, the dispenser 5 is mounted beneath the rim of a toilet bowl, by suspension hook 9, so that the front face 30 is directed towards the interior of the bowl. When the toilet is flushed, a
20 proportion of the toilet flush water circulating around the underside of the rim is deflected toward ramp surfaces 38a and 38b and, thereafter, through apertures 39 and into contact with chamber 8. Since the slot 23 in the chamber 8 is aligned substantially with the flush water stream, some flush water will
25 pass directly into the chamber causing a pumping action which causes a discrete dose of active substance to pass through hole 17 in the flow restrictor 15, and down into the chamber 8. The dose of active permeates through the chamber walls and releases fragrance and other vapour components. At the next
30 flush, the dose is removed by the flush water to pass into the toilet bowl and is replaced by another discrete dose.

Turning now to Figures 7 and 8, a dispenser 50 is shown for dispensing discrete doses of active substance from reservoir 51. As with the embodiment described above, the dispenser includes a hook section 52 which is configured, and operates
5 identically, to the hook section 9 of that embodiment.

Indeed the dispenser 50 is in most respects identical to the dispenser 5. The only important difference is that the porous chamber 8 is replaced by a non-porous peripheral wall section 53, defining chamber 54, which operates in conjunction with a
10 porous pad 55, the pad 55 being in contact with, or positioned closely adjacent to, the lower edge 56 of the wall section 53.

In the form shown, the front face 57 of the dispenser is formed into a rearwardly aligned ledge 58 at the lower end thereof. The ledge 58, in combination with the lower edge 56 of the wall
15 section 53, and the lower edge of intermediate wall section 59, defines a clipping slot which retains the pad 55 in position.

As with the porous chamber 8, the peripheral wall section 53 includes a rearwardly aligned, vertically extending slot 60 which, as shown, extends the full height of the wall section 53.
20 This allows flush water to enter the chamber 54 and create the pumping action in the manner described above.

The use and operation of the dispenser 50 is identical to that of dispenser 5 described above. The advantage of the dispenser 50, over dispenser 5, is that the pad 55 generally provides a
25 greater surface area than porous chamber 8, from which fragrances can emanate, between flushes.

Whilst the predominant pumping action is believed to be a positive displacement of air within chamber 8, 54 and channel 18 into the reservoir 7, 51 causing active substance to be
30 displaced back through the hole 17, the rapid passage of flush

water over the outlet channel 18, as well as the rapid drainage of flush water through slot 23, 60 may, in addition, create venturi effect of suction which draws active through the hole 17. Obviously the configuration of the dispenser herein
5 described could be varied to enhance the venturi or suction effect.

It is also possible to provide an air bleed tube up through the reservoir to vent the headspace within the reservoir, to the void beneath the flow restrictor 14.

10 Whatever the precise dose release action may be, we have found that a dispenser as above described displays the following attributes:

- 1) Efficacious results are achieved with each flush, no
15 matter how close together the flushes in contrast to prior art dispensers which take considerable time to recover to full efficacy;
- 2) The toilet and surrounding areas are freshened continuously;
- 3) One or more discrete doses of active are released with
20 each flush ensuring constant performance over the life of the contents of the reservoir.

It will thus be appreciated that the present invention provides a simple yet effective form of rim mounted dispenser for dispensing active substances into a toilet bowl.

Claims

- 1) A dispenser for suspension from the rim of a toilet bowl,
said dispenser including:
- 5 a reservoir for containing a viscous liquid active
substance;
- a flow restrictor operable to limit the flow of said active
substance from said reservoir, said flow restrictor having
an inlet side and an outlet side,
- 10 said dispenser being characterised in that application of
toilet flushing water thereover creates a pumping action
which operates to displace at least one discrete dose of
said active substance through said flow restrictor.
- 2) A dispenser as claimed in claim 1 wherein said pumping
action comprises a pressure differential within said
15 dispenser to drive said active substance through said flow
restrictor.
- 3) A dispenser as claimed in claim 1 or claim 2 wherein said
pumping action operates to displace a volume of air
through said flow restrictor from the outlet side thereof,
20 which volume of air, in turn, displaces said at least dose
of active substance through said flow restrictor from the
inlet side thereof.
- 4) A dispenser as claimed in any one of claims 1 to 3
wherein said pumping action operates to reduce the
25 surface tension of said active substance, in the region of
said flow restrictor, for a time sufficient to allow said
discrete dose to be released through said flow restrictor.

- 5) A dispenser as claimed in any one of claims 1 to 4 wherein said dispenser is constructed and arranged so that, in its normal position of use, said active substance contacts the inlet side of said flow restrictor under gravity.
- 6) A dispenser as claimed in any one of claims 1 to 5 further including at least one fluid dispensing surface spaced from the outlet side of said flow restrictor from which components of said active substance can emanate.
- 7) A dispenser as claimed in claim 6 wherein said dispensing surface is positioned to receive active substance from said flow restrictor under gravity.
- 8) A dispenser as claimed in claim 6 or claim 7 wherein said dispensing surface is provided as one or more wall surfaces of a chamber positioned to receive active substance from said flow restrictor.
- 9) A dispenser as claimed in claim 8 wherein said chamber is formed, at least in part, from a porous material.
- 10) A dispenser as claimed in claim 8 or claim 9 wherein said chamber includes a substantially vertical peripheral wall and closing means at the bottom of said peripheral wall.
- 11) A dispenser as claimed in claim 10 wherein said peripheral wall is cylindrical in cross-section.
- 12) A dispenser as claimed in any one of claims 1 to 8 wherein said chamber is defined by a non-porous peripheral wall section in combination with a porous bottom surface.

- 13) A dispenser as claimed in any one of the preceding claims further including venting means operable to maintain a void on the outlet side of said flow restrictor between flushes.
- 5 14) A dispenser as claimed in any one of claims 8 to 13 further including ramp means constructed and arranged to direct water towards said chamber.
- 10 15) A dispenser for suspension from the rim of a toilet bowl to dispense active substance into a toilet bowl, said dispenser including:
- a body member;
- a reservoir for active substance included within or mountable on said body member;
- 15 a dispensing surface positioned to receive active substance from said reservoir and, upon flushing, to release said active substance to flush water; and
- release means operable to control the flow of active substance from said reservoir to said dispensing surface,
- 20 said dispenser being characterised in that said release means is operable to dispense at least one discrete dose of said active substance on to said dispensing surface upon flushing of said toilet.
- 25 16) A dispenser for suspension from the rim of a toilet bowl to dispense active substance into the bowl, said dispenser including
- a reservoir for active substance;

a dispensing surface positioned to receive active substance from said reservoir and to release said active substance to flush water when the toilet is flushed; and

5 release means to control the transfer of said active substance from said reservoir to said dispensing surface,

said dispenser being characterised in that, in use, a void is maintained between said reservoir and said dispensing surface between flushes.

10 17) A dispenser as claimed in claim 13 or claim 14 wherein said dispensing surface is formed, at least in part, from a porous material.

18) A dispenser as claimed in claim 17 wherein said porous material is shaped into a cylinder with one end closed.

15 19) A dispenser as claimed in claim 17 wherein said dispensing surface comprises a porous plate or mat positioned at the lower end of a peripheral non-porous wall section.

20 20) A dispenser for suspension from the rim of a toilet bowl to dispense active substance into the bowl when constructed, arranged and operable substantially as hereinbefore described with reference to, and as illustrated in, the accompanying drawings.

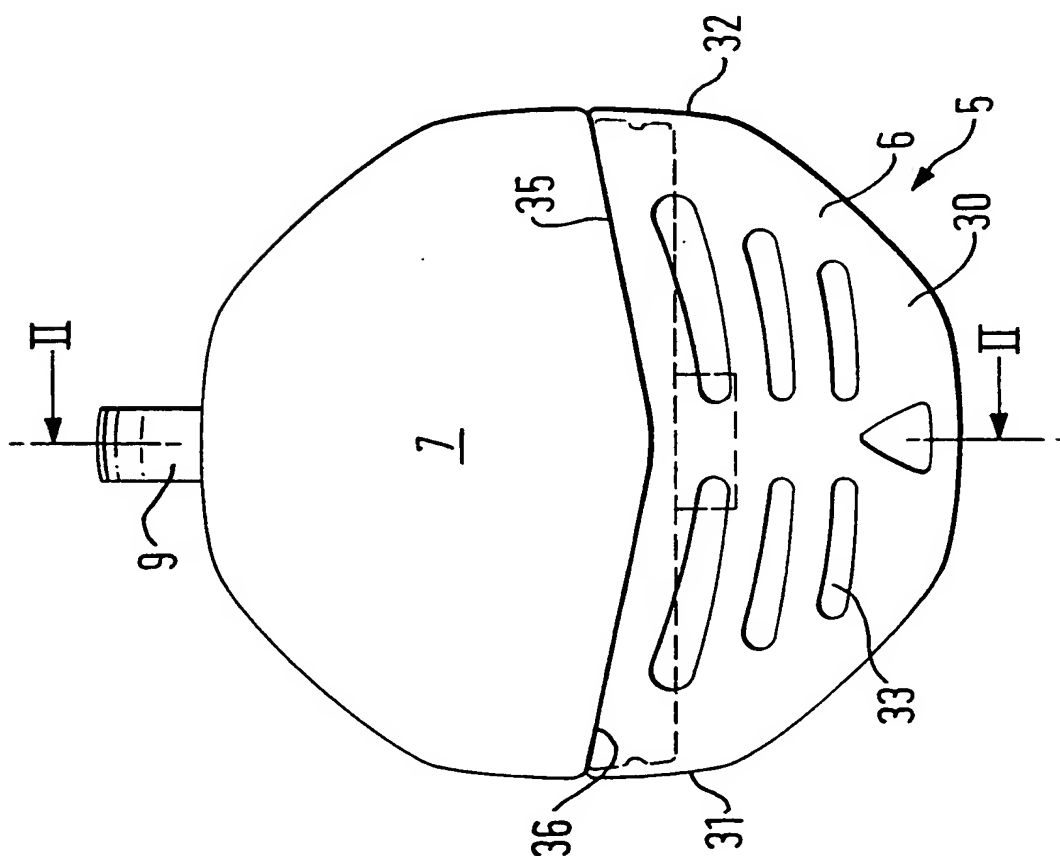


FIG. 1

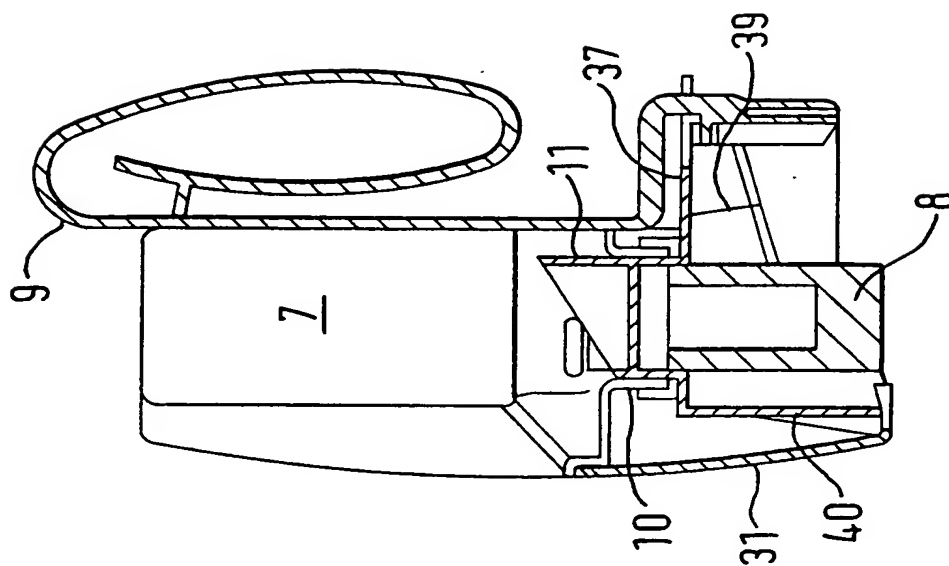


FIG. 2

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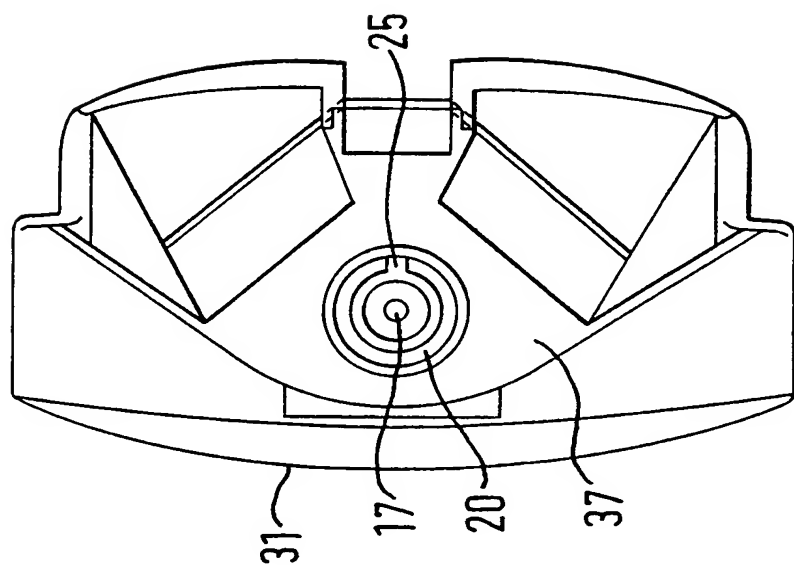


FIG. 4

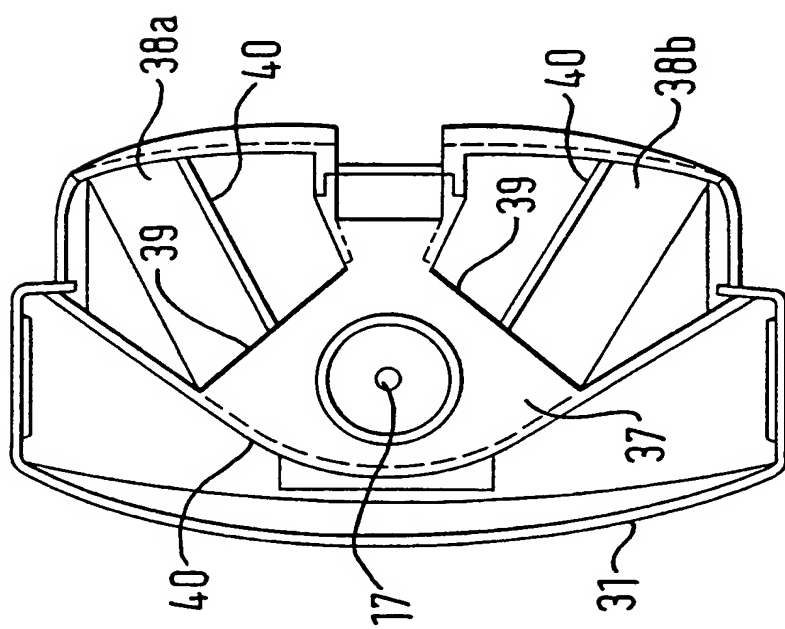


FIG. 3

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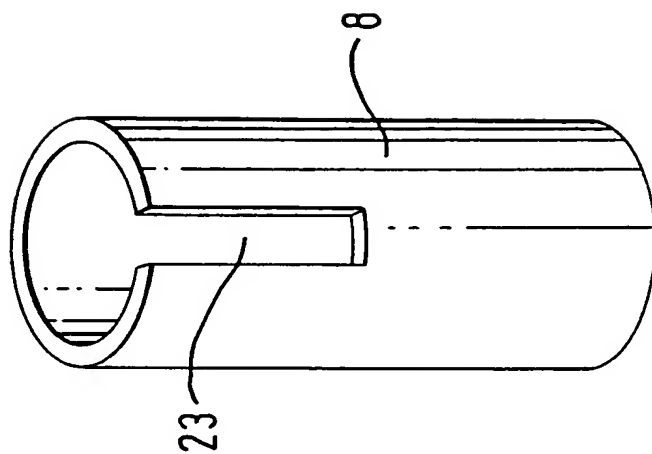


FIG. 6

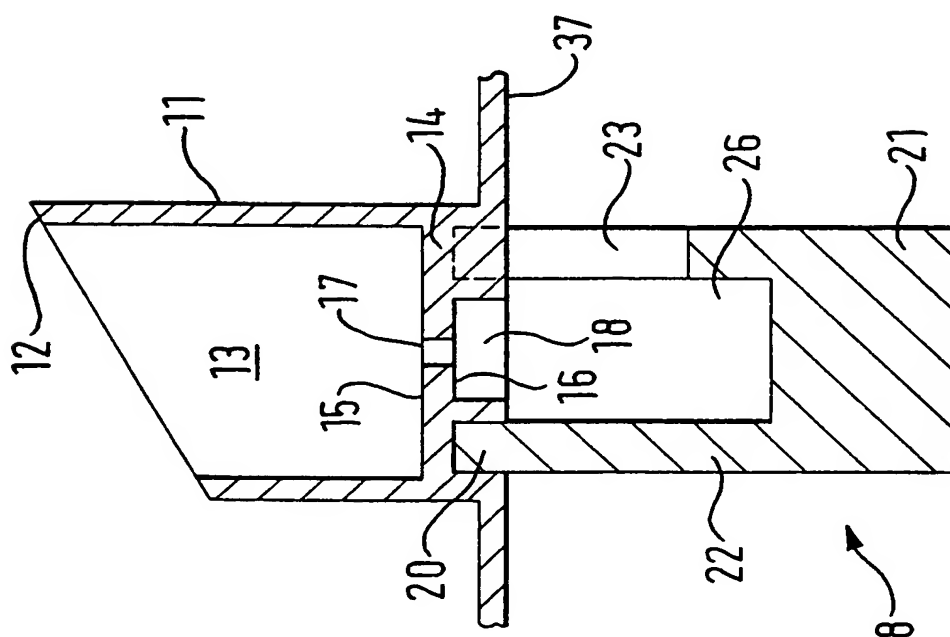


FIG. 5

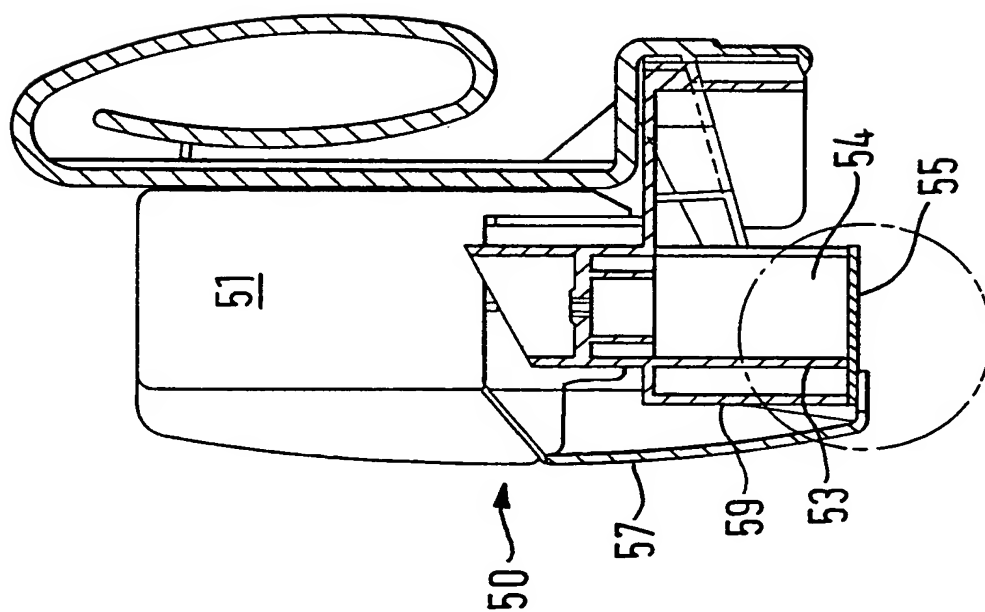


FIG. 7

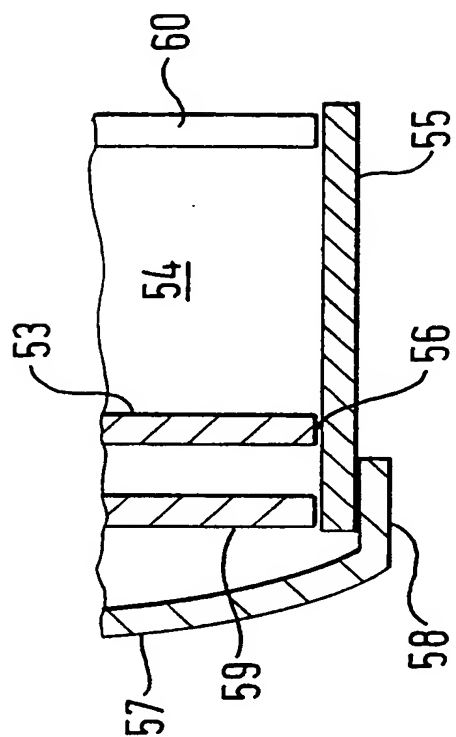


FIG. 8